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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,607	01/15/2004	Fabienne Chatel-Pelage	Serie 6415	5372
7590	11/01/2004		EXAMINER	
Linda K. Russell, Esq. Air Liquide Ste 1800 2700 Post Oak Blvd. Houston, TX 77056			GRAVINI, STEPHEN MICHAEL	
			ART UNIT	PAPER NUMBER
			3749	
			DATE MAILED: 11/01/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/758,607	CHATEL-PELAGE ET AL.
	Examiner	Art Unit
	Stephen Gravini	3749

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 01 June 2004.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-31 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1-31 is/are rejected.
7) Claim(s) _____ is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20040601.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .

5) Notice of Informal Patent Application (PTO-152)

6) Other: ____ .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norton (US 4,690,074) in view of Burge et al. (US 4,217,132). Norton is considered to disclose the claimed invention comprising:

creating a fuel gas stream by mixing the solid fuel particles with a conveying gas (please see column 3 lines 52-64);

transporting the fuel gas stream through a fuel duct terminating at the combustion chamber at a fuel exit plane (please see column 3 line 65 through column 4 line 6). Norton is also considered to disclose the claimed feature of selecting a target O₂ content in the flue gas then selecting the O₂ content of the oxygen stream then selecting the flow rate of conveying gas desired to maintain the solid fuel particles and the conveying gas in mixed relation so that the fuel gas stream can be transported

through the fuel duct to the combustion chamber without separation and then adjusting the total amount of oxygen entering the combustion chamber to yield the target O₂ content in the flue gas (column 4 lines 22-35) and wherein the conveying gas is air (column 4 line 22). Norton is considered to disclose the claimed invention except for the feature of injecting an oxygen stream through an injection device into said fuel gas at an oxygen injection location selected to create a mixing zone to mix the oxygen stream and the fuel gas stream proximate to the fuel exit plane. Burge, another combustion system, is considered to disclose the feature of injecting an oxygen stream through an injection device into said fuel gas at an oxygen injection location selected to create a mixing zone to mix the oxygen stream and the fuel gas stream proximate to the fuel exit plane at column 21 lines 4-24). It would have been obvious to one skilled in the art to combine the teachings of Norton with the feature of injecting an oxygen stream through an injection device into said fuel gas at an oxygen injection location selected to create a mixing zone to mix the oxygen stream and the fuel gas stream proximate to the fuel exit plane, considered disclosed by Burge for the purpose of providing a tertiary injection source stream such that mixing can occur for more optimum fuel burning.

Claims 2 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norton in view of Burge in further view of Takahashi et al. (US 4,239,932). Norton in view of Burge is considered to disclose the claimed invention, as discussed in the obviousness rejection above, except for the claimed feature of selecting the injection device to enhance mixing of the oxygen stream and the fuel gas stream to reduce the formation of NO_x during combustion of the fuel and steps of selecting the injection

device to enhance mixing of the oxygen stream and the fuel gas stream to reduce the formation of NOx during combustion of the fuel then selecting a target O2 content in the flue gas then selecting the O2 content of the oxygen stream then selecting the flow rate of conveying gas desired to maintain the solid fuel particles and the conveying gas in mixed relation so that the fuel gas stream can be transported through the fuel duct to the combustion chamber without separation and then adjusting the total amount of oxygen entering the combustion chamber to yield the target O2 content in the flue gas. Takahashi is considered to disclose injection device selection and selected content flow rates and adjustments at column 1 lines 45-58 and as shown in table 1. It would have been obvious to one skilled in the art to combine the teachings of Norton in view of Burge with the injection device selection and selected content flow rates and adjustments, considered disclosed by Takahashi for the purpose of providing optimum mixture of flow gas for desired fuel burning results.

Claims 12-15 and 24-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norton in view of Burge in view of Takahashi in further view of Hura et al. (US 5,909,003). Norton in view of Burge in view of Takahashi is considered to disclose the claimed invention, as discussed in the obviousness rejection above, except for the claimed mixtures of natural gas, air, recirculated flue gas, and/or oxygen with selected volume percentages or oxygen ring with claimed diameters. Hura is considered to disclose mixtures of natural gas, air, recirculated flue gas, and/or oxygen at column 3 lines 26-51, column 6 lines 8-17, and column 5 lines 12-39 respectively and oxygen ring at column 5 lines 40-67. With respect to 20% of air being oxygen, examiner

takes Official notice that oxygen contains 20% oxygen. It would have been obvious to one skilled in the art to combine the teachings of Norton in view of Burge in view of Takahashi with the mixtures of natural gas, air, recirculated flue gas, and/or oxygen, considered disclosed by Hura for the purpose of providing optimum mixture of flow gas for desired fuel burning results. Furthermore Norton in view of Burge in view of Takahashi in further view of Hura is considered to disclose the claimed invention, except for the claimed selected volume percentages or claimed diameters. It would have been an obvious matter of design choice to provide the selected volume percentages or claimed diameters, since the prior art shows certain volume percentages or claimed diameters that are capable of providing the same results as claimed.

Claims 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norton in view of Burge in view of Takahashi in view of Hura in further view of Satchell et al. (US 6,244,854). Norton in view of Burge in view of Takahashi in view of Hura is considered to disclose the claimed invention, as discussed in the obviousness rejection above, except for the claimed oxygen lance nozzle with claimed configurations. Satchell is considered to disclose oxygen lance nozzle at column 6 lines 17. It would have been obvious to one skilled in the art to combine the teachings of Norton in view of Burge in view of Takahashi in view of Hura with the oxygen lance nozzle, considered disclosed by Satchell for the purpose of providing optimum mixture of flow gas for desired fuel burning results. Furthermore Norton in view of Burge in view of Takahashi in view of Hura in further view of Satchell is considered to disclose the claimed

invention, except for the claimed configurations. It would have been an obvious matter of design choice to provide the configurations, since the prior art shows certain configurations that are capable of providing the same results as claimed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References F-E, cited in this action, are considered to disclose processes of improving combustion systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Gravini whose telephone number is 703 308 7570. The examiner can normally be reached on normal weekday business hours (east coast time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ira S. Lazarus can be reached on 703 308 1935. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Smg 10-29-04

Stephen M. Gravini